BISS Biodiversity Information Science and Standards

Biodiversity Information Science and Standards 2: e25723
doi: 10.3897/biss.2.25723

OPEN ACCESS

Conference Abstract

TaxonWorks: A Use Case in Documenting Complex Biological Relationships

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Received: 11 Apr 2018 | Published: 22 May 2018

Citation: Trivellone V, Dietrich C, Dmitriev D, Yoder M (2018) TaxonWorks: A Use Case in Documenting Complex Biological Relationships. Biodiversity Information Science and Standards 2: e25723.
https://doi.org/10.3897/biss.2.25723

Abstract

Compilation and retrieval of reliable data on biological interactions is one of the critical bottlenecks affecting efficiency and statistical power in testing ecological theories. TaxonWorks, a web-based workbench, can facilitate such research by enabling the digitization of complex biological interactions involving multiple species, individuals, and trophic levels. These data can be further organized into spatial and temporal axes, and annotated at the level of individual or grouped interactions (e.g. singularly citing the combined elements of a tritrophic interaction). The simple, customizable nature of tools ultimately reduces the time-consuming steps of data gathering, cleaning, and formatting of datasets for subsequent exploration and analysis while also improving the asserted semantics.

An example use case is provided with a dataset of associations among plants, pathogens and insect vectors. The curated data are accessed through the JSON serving TaxonWorks API (Application Programming Interface) by an R package. Analysis and visualization of the network graphs persisted in TaxonWorks is demonstrated using core R functionality and the *igraph* package (Csardi and Nepusz 2006).

TaxonWorks is open-source, collaboratively built software available at http://taxonworks.org
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Keywords

biotic interactions, network model, workbench, API, database.

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